

Pediatric Gastroparesis

Dr. Ahmad Jaafar

MD, FRCPC

Pediatric Complex Care
McMaster Children's Hospital
McMaster University



Objectives

By the end of the presentation, the learner will have a clearer understanding of:

- ❖ The definition, prevalence, etiology and clinical features of pediatric gastroparesis.
- ❖ The management of pediatric gastroparesis.

Definition

Gastric motility disorder characterized by **delayed gastric emptying (GE)** in the **absence of mechanical obstruction**
(liquid GE is often preserved)

Prevalence

- ◇ No data available on prevalence of gastroparesis in children
- ◇ M = F in 1 large retrospective study

Etiology

◆ What are the common causes of gastroparesis?

Etiology

- ◇ Idiopathic 70%
- ◇ Drug-induced 18%
- ◇ Post-surgical 12.5%
- ◇ Post-viral 5%
- ◇ Diabetic 4%

Etiology

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- ◆ **Drug-induced 18%**
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Common drugs causing gastroparesis:
Opioids, α -2 adrenergic agonists, TCA, anticholinergics, PPI, antacids, H2 receptor blockers, sucralfate, octreotide, β -adrenergic agonists, calcium channel blockers and diphenhydramine

Etiology

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- ◇ **Post-surgical 12.5%**
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Common surgeries causing gastroparesis: Upper GI surgery and heart/lung transplantation

Etiology

- ◇ Idiopathic 70%
- ◇ Drug-induced 18%
- ◇ Post-surgical 12.5%
- ◇ **Post-viral 5%**
- ◇ Diabetic 4%

Common viruses causing gastroparesis: Rotavirus, EBV and CMV

Usually self-limited and resolves within 24 months

Comorbidities

- ◆ Seizure disorders
- ◆ CP
- ◆ DD
- ◆ Prematurity
- ◆ Behavioral problems such as ADHD, anxiety, and bipolar disorder

Comorbidities

GERD is a **COMMON** complication of gastroparesis.

Clinical Features

- ◇ Vomiting 68%
- ◇ Abdominal pain 51%
- ◇ Nausea 28%
- ◇ Weight loss 27%
- ◇ Early satiety 25%
- ◇ Postprandial fullness 7%

Correlation between the severity of symptoms and the degree of delayed GE is poorly defined.

Differential Diagnoses

- ◇ Esophagitis/gastritis
- ◇ Peptic ulcer disease
- ◇ SIBO
- ◇ Intestinal obstruction
- ◇ Functional dyspepsia
- ◇ Cyclical vomiting syndrome
- ◇ Rumination syndrome
- ◇ Medications (e.g., anti-neoplastic medications)

Investigations

Initial investigation: Upper gastrointestinal contrast study or upper GI scope to rule out mechanical obstruction

Investigations

Subsequent investigation: GE scintigraphy (gold standard) or breath test to confirm delayed GE

- ◇ Breath test's advantage is that it does not expose the patient to radiation, but it can be inaccurate in patients with specific conditions such as celiac disease and liver cirrhosis.

Investigations

Other methods that measure GE time: Transabdominal U/S, MRI and antroduodenal manometry

Treatment

General:

- ◇ Treatment of underlying disease
- ◇ Correction of fluid and electrolyte imbalances
- ◇ Alleviation of symptoms
- ◇ Optimizing nutritional status
- ◇ Hospitalization for severe symptoms (e.g., intractable vomiting)

Treatment

Diet and lifestyle changes:

- ◇ Small-volume and frequent meals with low content in fat and non-digestible fibers
- ◇ Avoidance of carbonated beverages and lying down for 1-2 h following meals
- ◇ Referral to a RD
- ◇ In severe/persistent cases:
 - Strict liquid diet
 - Enteral nutrition via naso-jejunal tube or jejunostomy
 - TPN – if enteral nutrition fails

Treatment

Medications:

- Prokinetics
- Antiemetics
- PPIs

Treatment

Medications:

➤ Prokinetics

- ◆ **Metoclopramide:** Dopamine antagonist, central antiemetic and peripheral prokinetic effects, side-effects (galactorrhea, extrapyramidal symptoms)

Treatment

Medications:

➤ Prokinetics

- ◆ **Domperidone:** Dopamine antagonist, peripheral prokinetic effect - does not cross the BBB, side effects (galactorrhea, prolonged QTc)

Treatment

Medications:

➤ Prokinetics

- ◆ **Erythromycin:** Subtherapeutic dose (less than Abx dose) for its prokinetic agent, side-effects (pyloric stenosis in neonates, risk of prolonged QTc unclear)

Treatment

Medications:

➤ Prokinetics

- ◆ **Cisapride:** Serotonin 5-HT₄ receptor agonist and parasympathomimetic, side-effect (prolonged QTc)

Treatment

Medications:

➤ Prokinetics

- ◆ **Prucalopride:** Serotonin 5-HT₄ receptor agonist, side-effects (headache, GI symptoms such as abdominal pain, diarrhea, N/V)

Treatment

Medications:

➤ Antiemetics:

- ◆ Phenothiazines (e.g., prochlorperazine), 5-HT₃ antagonists (e.g., ondasetron), dopamine antagonists (e.g., metoclopramide), histamine H₁ antagonists (e.g., diphenhydramine), and benzodiazepines (e.g., lorazepam)

Treatment

Medications:

➤ PPIs:

- ◆ Lansoprazole, omeprazole, esomeprazole, and pantoprazole to address associated GERD

Treatment

Botox injections:

- ◇ Botulinum toxin type A
- ◇ Endoscopically injected into the pylorus
- ◇ Blocks the release of acetylcholine from cholinergic nerve endings → promotes GE
- ◇ Occasionally used in children with refractory gastroparesis

Treatment

Gastric stimulator:

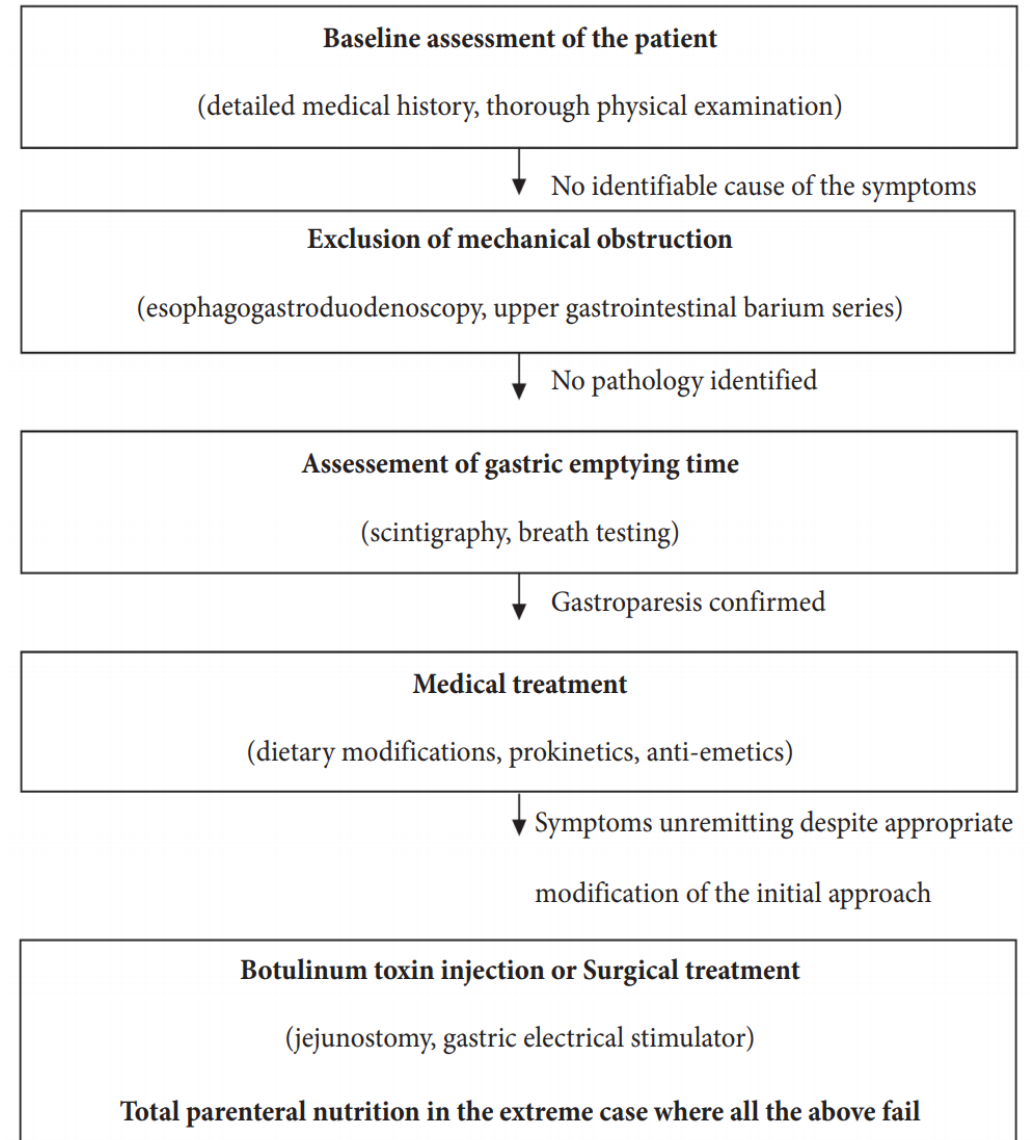
- ◇ Laparoscopic implantation of two electrodes into the seromuscular layer of the stomach → connected to a pacemaker
- ◇ Long-term efficacy and safety to be established

Treatment

Surgery:

- ◇ Gastrostomy tube insertion:
 - To facilitate gastric ventilation and symptomatic relief
 - To place a jejunostomy tube for nutrition
- ◇ Reserved for refractory cases that fail medical treatment

Stepwise
approach in the
diagnosis and
treatment of
gastroparesis



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Thank You!



ahmad.jaafar@medportal.ca